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The ARL MSRC Newsletter

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Inside

ARL MSRC in Full Swing

Through the DoD High Performance Computing modernization program, ARL has developed a state-of-the-art major shared resource center (MSRC). It is now in full production, providing leading-edge HPC technologies and tools to aid DoD scientists and engineers, according to Charles J. Nietubicz, Director of the ARL MSRC and Chief of ARL's High Performance Computing Division.

Of the four major centers in the DoD program, Nietubicz says that the ARL MSRC is the primary provider of multi-architecture classified systems. A full complement of unclassified HPC systems, as well as state-of-the-art near-line mass storage, and leading-edge scientific visualization capabilities are also available.

ARL MSRC integrated services support MSRC customers by providing 24-hour operations, maintaining accounts, offering training, supplying documentation, supporting computational and applications environments, maintaining classified and unclassified connectivity, and addressing customer concerns.

ARL MSRC team members review the production schedule for the new Cray T916 that now enhances the center's unclassified capabilities. From the left are Denice Brown, Manager of Operations and Customer Services, Charles Nietubicz, MSRC Director, Dr. Joice Bartleson, Raytheon E-Systems Program Manager and Tom Crimmins, MSRC Contracting Officer's Technical Representative.

Recently, the ARL MSRC took delivery of two Silicon Graphics/ Cray Research, Inc. T916 supercomputers. These systems, each configured with 8 processors and 512 megawords (4 gigabytes) of memory, round out the initial performance capability of the site. The addition of the most powerful parallel vector processing available to DoD augments the Silicon Graphics, Inc. distributed shared memory Origin 2000s, SGI/ Cray J932s, and the SGI Power Challenge Array serving defense scientists and engineers using the center.

Please see "Key enabling technologies" on page 10

The purpose behind the bytes...

ARL Gives Edge to U.S. Military

Providing a clear and undisputed advantage to our military forces through High Performance Computing is the mission of the Major Shared Research Center (MSRC) at ARL.

The need for supercomputers became apparent to the military during World War II with the development of many new types of ordnance. There was a critical need for trajectory information for each weapon, computed for every possible propellant charge and guntube elevation, with corrections for variables like temperature, wind speed and wind direction. The ENIAC - the world's first supercomputer - could calculate a 60-second trajectory in 30 seconds in 1947, compared with the 20 hours of human effort it would require. Today's state-of-the-art supercomputers can calculate the same trajectory in approximately three microseconds.

Supercomputing has become essential to the design and evaluation of any new or improved weapons system. High-end computational capabilities are required for all aspects of DoD research, development, test and evaluation - from basic research in the laboratories to product validation at the test centers. The extent of the impact is increasing.

ARL Computational Areas

The ARL MSRC focus is on six of the critical defense computational technology areas: fluid dynamics, structural mechanics, chemistry and materials, forces modeling, signal and image processing, and integrated modeling and testing.

Derek Moses, webmaster, and Debbie Thompson of the SciVis team collaborate on outreach activities.

Supercomputing has become essential to the design and evaluation of any new or improved weapons system.

Computational modeling and simulation allows the exploration of more options at a fraction of the cost of traditional and experimental methods.

Recent developments in warhead designs at ARL yielded an increase in lethality that was not previously achievable using conventional design methodologies. Current research involving the modeling of complex threat-target interactions (for example, missile-tank) can now accurately determine lethality and survivability.

High Performance Computing (HPC) research also enables scientists and strategists to consider many possible outcomes of a particular scenario.

One such project at ARL investigated the likely effects of a plane crash into a chemical agent storage yard. The objective of the project was to determine the response of a stack of one-ton containers of chemical agent to impact by a plummeting aircraft. The result of this research indicated that empty containers placed on top of the full containers provided an effective risk-reducing barrier that would minimize the danger to the surrounding population. This study was vital in a recent risk assessment of a storage yard at Aberdeen Proving Ground.

Sensor System Advances

The Signal and Image Processing computational area includes surveillance, reconnaissance, intelligence, communications, avionics, smart munitions and electronic warfare. Typical signal processing functions include detecting, tracking, classifying and recognizing targets in the midst of

noise and jamming. However, greater computational capability is required today to adequately exploit all the sensor information that is available. This is because advances in sensor systems over the past decade have dramatically increased the amount of sensor information available, while downsizing reduced the number of image analysts. Using HPC, more targets can be considered, and confidence measures for extended operating conditions can be quantified.

Materials Engineering

Chemical computational modeling involves designing new materials and extending the life of old ones. New materials include potential high energy fuels, new lubricants, and new laser-hardened materials.

One problem currently under study is that of "gun tube erosion" — the wearing down of the barrel or rifling during repeated firings. Computer simulations of the chemical processes that occur during firing are far simpler and cheaper than real-time testing. The results of this study could lead to development of different gun-tube materials or modifications to the propellants used in the weapons.

In addition to the Army Research Laboratory at Aberdeen Proving Ground, other MSRCs in the DoD HPC Modernization Program include the Aeronautical Systems Center (ASC) at Wright-Patterson Air Force Base, Ohio; the Army Corps of Engineers Waterways Experiment Station (CEWES) at Vicksburg, Mississippi; and the Naval Oceanographic Office (NAVO) at Stennis Space Center, Mississippi.

All Roads Lead to Chemistry for Dr. Margaret Hurley

Dr. Margaret Hurley says her life has never resembled a straight line.

She had no intention of becoming a chemist when she first went off to college. She planned on switching to a physics major after she took enough classes but got hooked on chemistry and stayed put. Hurley also thought she'd end up as a professor and again took a different route — focusing on research.

Since her graduate work at Ohio State University, she has lived and worked in countless places, including Australia, where she spent a year and a half at the University of Sydney. "I'd still be there, if my husband had gotten a job," she laughs, describing the country as "fabulous."

Wanderlust is easy to satisfy in her field, she says. Right now, she has settled down with Alex, her husband of 10 years, 6-year-old daughter Marie, and her basset hound.

Hurley took over the CCM on-site lead position at the ARL MSRC in July and says her main function is "going out and grabbing users and seeing what they need."

"I like that this place is growing and not everything is set yet," she says.

Hurley comes from a very broad background in theoretical chemistry – she's worked in both quantum and statistical mechanics. "I've done all kinds of things," she says. "Usually someone starts off with quantum mechanics and stays there. I'm used to doing research, so I know what people's stumbling blocks are."

She's been chatting with users about software and visualization needs, as well as finding out more about their projects to try and develop collaborations among researchers.

This position is different from any other she has had. "I've always been stuck down in a research lab. I see a lot more people this way," she muses.

Rolling the DICE

Researchers spend a lot of time waiting while their sophisticated computational codes are being processed. And typically, the larger the code, the longer the wait. It can take weeks to receive the results, which once analyzed, may not even be what the researcher required. The code will need to be tinkered with and run for a second time. The waiting begins again.

Life for researchers handling these "computationally-intensive codes" could be easier, and thanks to the development of DICE, Distributed Interactive Computing Environment, it is getting better.

DICE has evolved to its current format over the last two years, and Jerry Clarke, Jennifer Hare and Eric Schmitt continue to develop the environment based on users' needs. DICE applications have been developed in three Computational Technology Areas (CTAs).

Applications Toolkit

Clarke describes DICE very simply. "It's a toolkit for developing applications for High Performance Computing."

DICE is composed of a distributed shared memory system, a Graphical User Interface, and interactive 3D visualization. The basis for DICE is a Network Distributed Global Memory (NDGM) system that implements a contiguous unstructured heterogeneous physically distributed memory buffer, where codes are run and visualized.

"It's a unified interface," Schmitt says. "It doesn't matter if [the code] is running on a workstation, a Cray, or an Origin."

The strengths of each platform are used to give researchers a better environment.

Running over the NDGM is the DICE Data Directory (DDD), which provides runtime information and support for structured and unstructured data. The Graphical User Interface (GUI) allows researchers to input data in an easier manner, Clarke says.

"You take a code that's hard to run and make it more user-friendly," he says. This is accomplished by wrapping a code with a GUI and adding visualization to make it easier and better to use.

Larger data sets are normally computed on the big machines. But with the modular capabilities of DICE, Hare says, part of the data can be moved without moving the whole.

The strengths of each platform are used to give researchers a better environment, Clarke says. He compares this to the way complicated codes are commonly handled — run on a supercomputer somewhere, in a batch environment with results only viewed post-process. Working in this manner, he says, "is like trying to tune a radio with the volume down." That is why DICE is so important – as a complement to post-processing applications, the data can be viewed while the computation is still running. And the computation can also be suspended during the run.

The DICE team is presenting the user with an environment, rather than expecting the researcher to be familiar with many different platforms. "We let the scientist concentrate on the problem he's trying to solve," Clarke says, not on how to run the code. DICE allows "real time" visualization of the code.

New Environment

Three computational areas have taken advantage of this new environment so far: Computational Structural Mechanics (CSM), Computational Fluid Dynamics (CFD) and Computational Chemistry and Materials Science (CCM). Codes in these areas are excellent candidates because of their extremely large data sets, "good

HEAT Center hosts classes

Harford Community College's Higher Education and Applied Technology (HEAT) Center and the Programming, Environment and Training (PET) division of the MSRC reached an agreement in September that establishes a partnership between the two. PET will hold HPC courses and seminars for both academic credit and non-credit in conjunction with the 11 university partners that make up the HEAT center.

examples of codes we will see in the future," Clarke says, but DICE can be utilized in many other CTAs.

The CSM code, CTH, developed at Sandia National Lab in New Mexico, is used at ARL to study penetration mechanics. The code processes multiple time steps in a simulation. Each time step may take gigabytes of memory.

Two CFD codes, Dzonal and ZNS were incorporated into DICE. Dzonal is an explicit 3D supersonic zonal Navier-Stokes code, developed at ARL to study flow around Army projectiles. ZNS is based on the code F3D and is being modified to work with DICE as part of the CHSSI program. It is planned that researchers intimately familiar with the code will be helping the DICE team integrate it and work out any bugs, Hare says. After this, the researchers can routinely use DICE "with as much ease as they use their desktop environment," she says.

Plans have been made to incorporate two or three more codes into DICE in the next year, as well as increasing visualization capabilities and adding to what DICE can do on the ImmersaDesk.

At the end of the summer, DICE was integrated with the ImmersaDesk, to use the wand and head-tracking glasses for a navigational environment, Schmitt says. The ImmersaDesk also makes DICE accessible to multiple viewers and increases the interface capability.

A DICE-CTH interface seminar is planned for November. The DICE team intends to distribute DICE to the three other MSRCs through the CHSSI program.

For more information, contact Jerry Clarke, Jennifer Hare or Eric Schmitt at vis@arl.mil.

Leading Through the Looking Glass

If Rick Angelini was not the Scientific Visualization Team Leader, he thinks he'd be working at Disney World. "It's not that much of a stretch," he defends himself. "You have to be creative when you do this job."

He has spent a lot of time at ARL — beginning as a summer employee while still in college. In 1985, he joined the staff permanently and was a member of the original SciVis team. "Unlike the other teams, we've been together since 1991," Angelini says. He credits the self-motivation of the staff with making the SciVis department what it is today, and a factor in why the team is so strong.

"It just doesn't get any better than this," he says, referring to the equipment he uses. "I mean, this is the Cadillac of visualization." SciVis has two functions, he says, both of which center around the user. The first is to provide routine day-to-day visualization using off-the-shelf visualization packages. The second component is a research function, where the team solves "the hard problems," he says – things a commercial visualization package cannot handle.

The ARL MSRC prides itself on the ability to handle these "non-routine problems." "Most programers can solve routine problems. Addressing the big problems really sets ARL apart and makes us a major player in the national SciVis picture," he says.

Angelini says his work is very rewarding and is modest when talking about the team's accomplishments. He's quick to mention, however, that he hit a double off Hall of Fame pitcher Jim Palmer at Orioles Fantasy Camp this past spring.

"Yes, that was the highlight of the trip," he says dryly.

High Performance Students and

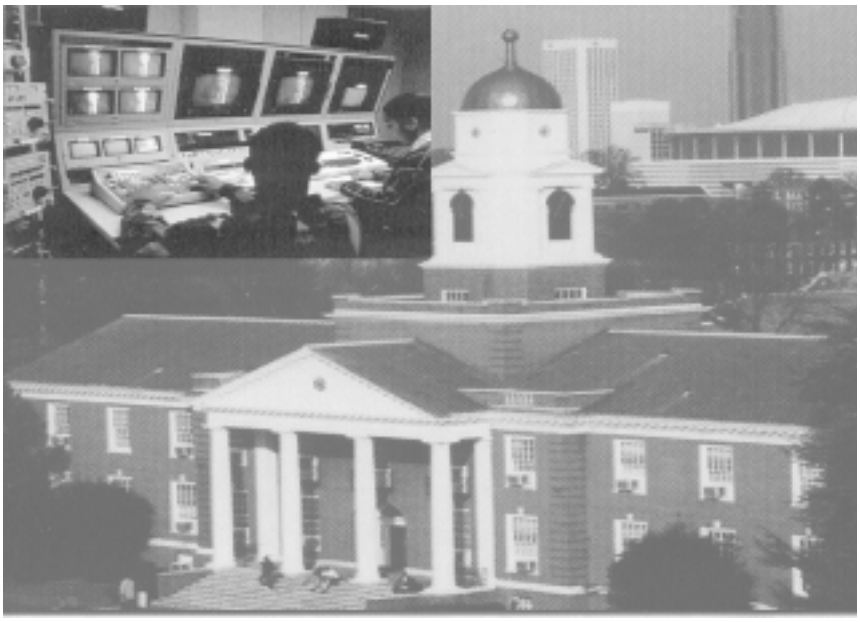
Most college students use the summer months to escape from school. It's a time to sleep late, watch Letterman and catch up on the latest John Grisham novel. Hard-core education can wait until September, when classes begin again.

Summer Interns

For a group of students at Clark Atlanta University (CAU), however, this is not an accurate picture. Young adults like Leon Milligan, Dietrice Bigby and Gary Jones spend their days inside computer laboratories, not outside in the warm Atlanta air. They cannot remember how many hours they've logged in, staring at monitors and figuring out problems. "Sometimes we're in here till ten at night," Bigby says, but like the others, she does not seem to mind.

The three students are seniors taking advantage of a summer intern program at the university where they do research involving high performance computing.

Clark Atlanta is one of 103 Historically Black Colleges and Universities (HBCUs) in the country and is part of a consortium of HBCUs in Atlanta that enrolls more than 14,000 students. Along with the role the school has as the ARL MSRC's lead HBCU, CAU is also a partner in the Army High Performance Computing Research Center (AHPCRC) at the University of Minnesota.



The ARL MSRC began an introductory Summer Institute Program this year at CAU. This two-week session offered instruction in FORTRAN, HTML and UNIX.

HPC as Hobby

Milligan eagerly leads his visitor upstairs to the lab where he has been working on three-dimensional graphics. He laughs when asked if the hallways and corridors have become a second home. "When you do something you love, it becomes a part of your free time," he says.

A double major in mathematics and mechanical engineering, Milligan hopes to start his own animation house one day, following in the extremely successful footsteps of Industrial Light and Magic, the special-effects giant created in 1975 by George Lucas.

He has always loved to draw, but as he grew older, he discovered his real forte – three-dimensional graphics. Using programs like AutoCAD and 3D Studio, Milligan is working on a "Virtual Campus" with a group of students. They are modeling the university so others can experience a virtual walk-through, and also for security purposes. When it's all done, Milligan says they want to pinpoint unsafe areas and work to make them safer.

Women and Computing Careers

Bigby, 21, has noticed that more and more young women are taking classes in areas like engineering and math — fields that, in the past, have been dominated by men. It's a fact that does not intimidate her, she says; she has wanted a career in the sciences for as long as she can remember. This is her first year participating in the summer research program and she has been working in the field of industrial robotics since May.

Bigby will receive a degree in

Computing Mix with Summer

While she was growing up, she loved astronomy and studying the deep sea. "I like to go places we usually can't go," she says. After completing her masters degree, Bigby wants to teach for a few years at the high school level and then start her own company to assist students with research in the telerobotics field.

Fluid Dynamic Simulations

Like Bigby, this is Jones's first summer as a research intern, though he has spent time during the school year working on similar projects. One of his projects deals with Computational Fluid Dynamics, an MSRC CTA. In it, he is examining the effects of wind loads on high-rise buildings, something that relates to his major: civil engineering. Jones spent time at the AHPCRC summer institute his freshman year, where the project was initiated. Instead of looking at buildings the "old-fashioned way," he says, wind effects can be simulated through a parallel CFD fluid-flow solver.

"It's more or less the definition of a new methodology for analyzing high-rise buildings," Jones says. Through the research, he was able to advance his knowledge of these issues and had the chance to travel the country to present the results.

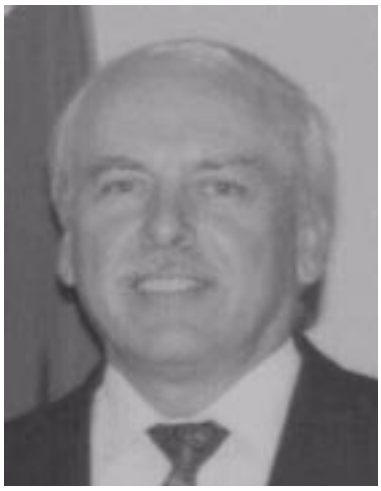
Jones will complete his degrees in May, with a BS in Civil Engineering from Georgia Tech and a degree in mathematics from Clark Atlanta. But he won't stop there. Next fall he hopes to go back to Georgia Tech for a Ph.D. in Structural Engineering.

HBCU Relationship Grows

The MSRC's relationship with its HBCU partners is just beginning, but it's starting to grow, says Virginia To, PET Program Manager. Right now, Jackson State University is also an HBCU partner and both Morgan State University and Howard University are potential partners. The HBCUs will be encouraged to propose programs that are linked to CTA areas, she said.

For more information about attending the 1998 Summer Institute, contact Virginia To at 410-278-9282 or ginny@arl.mil.

Charles Nietubicz Leads the ARL MSRC



Charles J. Nietubicz is an associate fellow of the American Institute of Aeronautics and Astronautics and a member of the Army High Performance Computing Advisory Group.

Charles J. Nietubicz is Chief of the High Performance Computing Division (HPCD) of the Army Research Laboratory (ARL) and Center Director of ARL's Major Shared Resource Center (MSRC) at the Aberdeen Proving Ground in Maryland. Previously, he was chief of the Computing Technology Branch, where his focus was to connect scientists with HPC and the developing fields of computational science and scientific visualization.

He received masters and bachelors degrees in mechanical engineering from the University of Dayton and began his career as an assistant research engineer at the University of Dayton Research Institute.

Nietubicz has more than 25 years of experience in basic and applied research, focusing on experimental and computational aerodynamics. During the 1970s, he was responsible for expanding computing resources at the Ballistic Research Laboratory (BRL) and helped bring remote supercomputing to the desks of BRL scientists and engineers.

After completing a three year military obligation as a 1st Lieutenant in the US Army, he began his research work as a wind tunnel engineer for the BRL program.

Nietubicz has presented over 70 papers on a wide variety of HPC topics and is a recognized expert — both nationally and internationally — in computational fluid dynamics, particularly as applied to projectile aerodynamics; computational science; and weapons technology.

He has received the Army Superior Civilian Service award, three Research and Development Achievement awards, the Bronze Medallion at the Army Science conference and an ARL Associated Achievement Award.

Queuing Up for GRD

A new queuing system that dynamically allocates resources to users according to preset "sharing" guidelines, and allows control of resources from a single point, is now in use at the ARL MSRC, according to Denice Brown, Manager of Operations and Customer Services at the center.

"The new system has advantages for both the user and the system administrator, " says Brown. "Users can be assured of getting their job run in the most fair and efficient manner according to set sharing policies; the system administrator has the benefit of having the resource allocation done automatically, as well as being able to monitor resources at both the site and individual job level," Brown says. Previously, resources were degraded for everyone when a few users "overused" the system.

The system is a first for the MSRC in that it will control all machines from a single queuing environment. All users submit their jobs through a single interface no matter what machine the job is going to. For instance, in the case of the Power Challenge Array, the system selects one node for them. "This is a very good first step towards area-wide queuing for the MSRCs," says Brown.

The software - Global Resource Director (GRD) - was developed jointly by Raytheon E-Systems, Instrumental, and Genias. It dynamically adjusts available resources based on a share tree structure and the jobs currently running. In the present tree structure, 20% of system resources are allocated to the DoD Challenge Projects. The remaining 80% is allocated as follows: Army (30%), Navy (30%), Air Force (30%) and other DoD agencies (10%). This is in contrast to most traditional systems, which run jobs according to an assigned priority and size, and which cannot be adjusted once they begin execution.

Under this system, users specify information about the type of job they want to run. The system will automatically assign the job to the appropriate queue based on available resources and the job originator's position in the tree. Other parameters such as other jobs currently running for the same user are also factored in, so that no one user can monopolize system resources. However, if necessary, a system administrator can override the automatic structure.

For example, when a single user submits many jobs, other jobs that the user has in execution will receive fewer resource shares in order to keep total shares at the appropriate level. Conversely, when a job completes, the share entitlement of other work in progress for the associated user is escalated.

For information on how to submit jobs using GRD, see the GRD information on the ARL MSRC Website at www.arl.hpc.mil under "User Manuals," email msrchelp@arl.mil to request start-up instructions, or call User Services at 1-800-275-1552.

And to find out about GRD training classes, contact training@arl.mil.

Examples of GRD Commands

To submit a large Cray job:

```
qsub -l cray_large job_script
```

To request checkpointing for a large job submitted to the Cray:

```
qsub -l cray_large -ckpt cray job_script_name
```

To request checkpointing for a batch job submitted to the Origin 2000:

```
qsub -l o2k_batch -ckpt o2k job_script_name
```

To submit a job which requests a parallel environment:

```
qsub -pe pe_name slot_range my_job
```
where: *slot_range* is expressed as *MIN_SLOTS-MAX_SLOTS*
```
qsub -pe 02k_8_cpu 5-7 job_script_name
```

FAQs from the MSRC Help Desk

Q: Who do I call for help?

A: The MSRC help desk can be reached at 1-800-275-1552 or on email at msrchelp@arl.mil. The help desk is staffed from 7 a.m. to 6 p.m, eastern time.

Q: *How do I obtain an account?*

A: DoD employees must contact their local Service Agency Approval Authority (S/AAA) to arrange for an account on any of the ARL MSRC resources. The ARL S/AAA is Jack Cole (cole@arl.mil). A complete listing of the S/AAAs can be found at http://www.hpcmo.hpc.mil. Modernization program academic partners, just contact their program academic lead. A listing of academic leads can be found at our website under "PET contacts." Complete instructions and required forms can be found under "Account Registration" on our website.

Q: *How do I find the CTA software that I need?*

A: Check either the CTA software link at http://www.arl.hpc.mil, or the /usr/cta directory of the computer system that you are planning to use. If the desired directory exists check the permissions. If the directory is 700 or 770, then the software is still in the installation/testing phase and is not open to the general public. CTH is an exception and users of this software must be added to the appropriate group to access it.

Q: How do I log in?

A: When trying to access the unclassified arl.hpc.mil systems, you need to remember two important things:

1. Telnet into microcosm.arl.hpc.mil and then use ssh (secure shell) to access either seymour.arl.hpc.mil or eckert.arl.hpc.mil

   Ex: `telnet microcosm.arl.hpc.mil`
   `login:` *username*
   `password:` *password*
   `mircrocosm.arl.hpc.mil>` `ssh seymour.arl.hpc.mil`
   -or-
   `microcosm.arl.hpc.mil>` `ssh eckert.arl.hpc.mil`

2. To ftp files to or from outside the ARL domain, use /usr/ucb/ftp not /usr/krb5/bin/ftp

Remember to run the FTP command from the arl.hpc.mil machine, NOT the external machine.

Q: What, if any, special commands/ instructions should I know prior to using the system?

A: On the Cray systems, place the following in your .profile, .cshrc, or .tcshrc file, depending on which shell you use.

for csh and tcsh

```
source /opt/modules/modules/init/csh
module load modules PrgEnv mpt
source /usr/grd/default/common/settings.csh
```

for bsh and ksh

```
. /opt/modules/modules/init/ksh
module load modules PrgEnv mpt
. /usr/grd/default/common/settings.sh
```

On the SGI systems, place the following in your .profile or .login file, depending on which shell you use.

for csh and tcsh

```
source  /usr/grd/default/common/settings.csh
```

for bsh and ksh

```
. /usr/grd/default/common/settings.sh
```

Modernization Office Visit

Staff from the High Performance Computing Modernization Office visited the ARL MSRC on October 1. They were briefed by MSRC personnel and received a tour of the facility. At right, John Vines, (seated) video production specialist, discusses aspects of making the new ARL MSRC video.

From left to right (standing) : Kay Howell, Harold Breaux (in the background), Nahid Sidki, Cray Henry and Rick Angelini.

Key Enabling Technologies

continued from page 1

A major feature of the ARL MSRC is the establishment of a Programming Environment and Training (PET) component. A primary goal of PET is sustaining projects which serve as pathfinders in the quest to put the best enabling computational techniques in the hands of applications specialists as rapidly as possible. Nietubicz states that "the PET component is most important in order for HPC to have an immediate impact on new weapons systems and simulation-based acquisition."

The ARL MSRC executes a program to exploit HPC computational resources to provide DoD with the key enabling technologies and analytical support necessary to assure supremacy in future warfare. These technologies are supplied to the DoD Research Development Test and Evaluation (RDT&E) community within an organizational framework built by ARL's High Performance Computing Division (HPCD) government staff, augmented by Raytheon E-Systems personnel.

High performance computing and communication is playing an increasingly vital role in the defense science and technology program. The DoD plans to invest approximately $1 billion over the next five years, in a sustained program to exploit the best in computational technology and communications at its four MSRCs and 13 distributed centers. The ARL MSRC exemplifies the full-spectrum computational environment that enables the transfer of today's science to tomorrow's defense.

Defense Computational Areas

Technology areas of interest at the ARL MSRC are aligned along on six critical defense computational technology areas: fluid dynamics, structural mechanics, chemistry and materials, forces modeling, signal and image processing and integrated modeling and testing.

For additional information, visit the ARL MSRC website at:
http://www.arl.hpc.mil

and the DoD High Performance Computing Modernization website at
http://www.hpcmo.hpc.mil

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Contact the Outreach Team with suggestions for future stories at o-iwt@arl.mil or jfranks@arl.mil.

Photos by Doug LaFon, ARL-Adelphi

Training Calendar

November, 1997
4th - 6th (Tues. - Thurs.)
CTH, Sandia National Laboratories

December, 1997
2nd - 3rd (Tues. - Wed.)
Complex Physics and Turbulence, Dr. Bharat Soni, MSU

3rd - 4th (Wed. - Thurs.)
T&E Using HPC, Sam Blankenship, Georgia Tech

January, 1998
12th - 16th (Mon. - Fri.)
MPI, Tony Skjellum, Mississippi State University

21st - 22nd (Wed. - Thur.)
Khoros, Dr. Stan Ahalt, Ohio State University

To verify these courses and register, please visit the website at: http://www.arl.hpc.mil For additional information, contact Cheryl Bielema, Training Lead, at bielema@arl.mil, 410-278-7533, or send email to training@arl.mil.

Hit the MSRC website at http://www.arl.hpc.mil/

A multitude of information is available at the MSRC website, which is composed of two basic portions, the MSRC pages and the PET pages.

Along with basic MSRC information, the site contains links to Aberdeen Proving Ground, ARL, and a local visitor's guide. Users can register for accounts with a link to the HPCMP office, ask for customer assistance, contact staff and learn about available hardware and software. The PET pages have specific information about the PET program — CTA support, training schedules, tutorials and contacts.

Webmaster Derek Moses plans to add, among other things: on-line videos from select training courses, a calendar of events, FAQs and an expanded list of user manuals.

Contact him at moses@arl.mil with questions and suggestions.

The ARL MSRC help desk can be reached via email at msrchelp@arl.mil or 1-800-275-1552 and 410-278-1700

A chat forum has been established to enhance communication within the user community and between users and the MSRC staff.
An email list:
"msrc-support@arl.mil"
and a newsgroup:
"arl.msrc-support"
are available and are crosslinked to each other.

Users are encouraged to take advantage of these resources and post observations, ask questions and make announcements.

To subscribe to the email list, send your requests to:
"msrc-support-request@arl.mil."

To receive future issues of link, please send your mailing address to o-iwt@arl.mil.

Suggestions for articles you'd like to see can be sent to the above address or to jfranks@arl.mil

Inside the premiere issue...

link

Connecting Users to the ARL MSRC

The Army Research Laboratory
Major Shared Resource Center (AMSRL-CI-H)
Aberdeen Proving Ground, MD 21005-5067

BULK RATE
U.S. POSTAGE PAID
APG, MD
PERMIT NO. 1